

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of  
**Guido et al.**

Serial No.: **10/814,551**

Filed: **March 31, 2004**

For: **Affinity Group Window Management  
System and Method**

Attorney's Docket No: **4541-016**

)  
) Patent Pending  
)  
) Examiner: Henry Orr  
)  
) Group Art Unit: 2176  
)  
) Confirmation No.: 7434  
)  
)  
)

Mail Stop Appeal Brief-Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]**

I hereby certify that this correspondence is being:

☐ deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Appeal Brief Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

☐ transmitted by facsimile on the date shown below to the United States Patent and Trademark Office at (703) 273-8300.

July 14, 2008

Date

*Laura E. Morey*  
Laura E. Morey

This correspondence is being:

☒ electronically submitted via EFS-Web

**REVISED APPEAL BRIEF**

This Revised Appeal Brief is filed in response to the Notification of Non-Compliant Appeal Brief mailed July 9, 2008. Because the Notification requires additional headers throughout the Arguments, a replacement brief is submitted rather than individual sections.

**(I.) REAL PARTY IN INTEREST**

The real party in interest is International Business Machines Corporation.

## **II.) RELATED APPEALS AND INTERFERENCES**

There are no related appeals or interferences, to Applicants' knowledge.

## **(III.) STATUS OF CLAIMS**

Claims 1-28 are pending. Claims 1-28 are rejected. Appellants appeal the rejection of claims 1-28.

## **(IV.) STATUS OF AMENDMENTS**

All amendments have been entered.

## **(V.) SUMMARY OF CLAIMED SUBJECT MATTER**

A Graphical User Interface (GUI) is a well-known paradigm for a man-machine interface. Perhaps the best-known example of a GUI is the WINDOWS<sup>®</sup> operating system. (¶¶ 002, 0013) In such a GUI, different and independent applications appear to execute concurrently, with each application confined to a separate window. The windows may be manipulated within the GUI; for example, a window may be minimized to remove it from the major portion of the GUI (*e.g.*, the "desktop"), or maximized to occupy essentially all of the available display space. In between these extremes, a window may generally assume any size or rectangular shape. Separate windows – whether containing different and independent applications, or related aspects of the same application (such as a menu, toolbar, or the like) – may coexist in the GUI. In this case, the concept of so-called “z-ordering” controls which window(s) appears to overlies other windows, obscuring part or all of the underlying windows. A window assumes the highest z-order (that is, it is displayed on the top) upon being selected, such

as with a mouse click. Some applications generate multiple windows, all of which may change of their z-order in the GUI simultaneously. (¶¶ 003, 0015) Some applications may spawn other applications in new windows, and the z-order of the parent and child windows may change together. However, there is no means in the prior art for a user to associate different, independent applications running in different windows, such that the associated windows subsequently change their z-order together (¶ 0016).

Claim 1 recites a method of associating windows generated by different applications in a GUI environment into one or more affinity groups by a user and accessing the windows as a group. The method includes providing a GUI environment including a plurality of windows (¶ 0014) and establishing, by a user, a first affinity group comprising a subset of two or more, but less than all, of the plurality of windows in the GUI environment (¶¶ 0017, 0020). The first affinity group includes windows associated with at least two different, independent applications, such that the windows comprising said first affinity group are related (¶ 0014). The method includes raising a z-order of windows in the first affinity group above other windows in the GUI environment when any one window in said first affinity group is selected (¶¶ 0014, 0016, 0018).

Multiple such affinity groups may be defined. Claim 14 relates to a method of switching between two or more groups of windows in a GUI environment. The method includes providing a GUI environment including a plurality of windows (¶ 0014), said windows divided into at least first and second affinity groups (¶ 0021), each said affinity group comprising two or more but less than all of said plurality of windows and each said affinity group including at least one window associated a different, independent application than at least one other window in the group (¶ 0014). The method includes raising the windows of said first affinity group to a z-order level above the windows of said second affinity group in said GUI environment in response to

the user selecting a window in said first affinity group (§ 0022 – the highest z-order overlies all other windows in the GUI, regardless of their grouping). The method further includes raising the windows of the second affinity group to a z-order level above the windows of said first affinity group in said GUI environment in response to the user selecting a window in said second affinity group (§ 0022 – the highest z-order overlies all other windows in the GUI, regardless of their grouping).

Claim 19 is directed to a computer system (§ 0010) including a display device, at least one input device (§ 0012), and a processor (§ 0011). The processor is programmed to display a GUI environment including a plurality of windows and a plurality of z-order levels on the display device (§ 0013). The GUI environment is operative to allow a user to form affinity groups of the windows via the input device. Each affinity group includes windows associated with at least two different, independent applications (§ 0014). The GUI environment is further operative to allow a user to select one window to receive a GUI environment window focus, such that when a window in an affinity group receives the window focus, all windows within the affinity group rise to one or more z-order levels higher than all windows not within the affinity group (§§ 0014, 0016, 0018).

Claim 25 is directed to a computer readable medium (§ 0011) storing computer-executable process steps for a GUI environment including a plurality of windows and a plurality of z-order levels. The computer-executable process steps cause a computer to perform the steps of displaying the GUI environment on a display device (§ 0013), and accept, from a user, designation of a first affinity group comprising a subset of two or more but less than all of the plurality of windows in said GUI environment (§ 0017), the first affinity group including windows associated with at least two different, independent applications, such that the windows

comprising the first affinity group are related (§ 0014). The computer-executable process steps cause the computer to raise a z-order of windows in the first affinity group above other windows in the GUI environment when any one window in the first affinity group is selected (§§ 0014, 0016, 0018).

According to the claimed invention, a user may create one or more affinity groups comprising windows running separate, independent applications, and change the z-order of all windows and the group simultaneously.

#### **(VI.) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

Whether claims 1-5, 10-22, and 25-28 are obvious under 35 U.S.C. § 103 over U.S. Patent No. 5,995,103 to Ashe in combination with U.S. Patent No. 5,920,313 to Diedrichsen *et al.*?

Whether claims 6-9, 23, and 24 are obvious under 35 U.S.C. § 103 over Ashe and Diedrichsen in combination with U.S. Patent No. 5,694,561 to Malamud *et al.*?

Whether claims 6-9, 23, and 24 are obvious under 35 U.S.C. § 103 over Ashe and Diedrichsen in combination with U.S. Patent Application Publication No. 2005/0198585 to Haynes?

#### **(VII.) ARGUMENT**

##### **35 U.S.C. § 103 Rejections Under Ashe and Diedrichsen**

The claims recite grouping *different* and *independent* applications.

Every independent claim recites grouping GUI windows running *different* and *independent* applications, and simultaneously altering the z-order of all windows in the group.

As one example, the specification describes, at ¶ 0014, and with reference to Figure 2, a window 40 associated with a word processor application, a window 38 associated with an e-mail client, and a window 36 associated with a web browser. The user may define an affinity group comprising the windows 36, 38, 40. Thereafter, whenever one of the windows 36, 38, 40 is selected, all three windows 36, 38, 40 rise to the top of the GUI desktop (*i.e.*, they overlie, or obscure, all other windows). The applications are *different* in that they are not the same application, and are *independent* in that they are not logically or functionally related. Both limitations are expressly recited in claims 1, 14, 19 and 25, and cannot be ignored.

Claims 1, 14, 19, and 25 stand rejected as being obvious over the combination of Ashe and Diedrichsen. Neither Ashe nor Diedrichsen, separately or in combination, teach or suggest grouping GUI windows associated with *different* and *independent* applications, and simultaneously altering the z-order of all windows in the group with respect to other GUI windows, when one is selected.

Ashe discloses grouping windows associated with the same application.

Ashe discloses a window grouping mechanism for manipulating and displaying groups of windows, all of which are associated with *the same application* program, via a series of linked data structures. “For example, a drawing application may define a document window into which a user ‘draws’ images as well as floating or palette windows which contain tools, such as pencil, color, etc., for drawing those images.” col. 1, lines 48-51. Ashe discloses that a user may select only a subset of the palette windows to rise to the top of the desktop when the document window is selected, rather than all the palette windows the application has spawned, which may clutter the desktop. col. 3, lines 30-37. Ashe fails to teach or suggest an affinity group of GUI windows,

and manipulating the z-order of the group, where the windows are associated with at least two *different* applications. Rather, Ashe discloses grouping and z-order manipulating only windows spawned by a single application. Ashe accomplishes this by creating a linked data structure containing an entry for each window the application creates. Ashe includes group identification information in these data entries, indicating the group(s) with which each window is associated. col. 3, lines 37-45.

Ashe does not disclose grouping windows associated with different applications.

In the Background discussion, Ashe introduces the concept of z-ordering by describing window layer priority classes. In particular, a screensaver having a priority class of 2 will always overlie a window having a priority class of 3, such as a word processing application, a spreadsheet application, or the like. Ashe notes that the applications having priority class 3 can overlie each other in z-order. The Examiner conflates this background discussion of z-ordering with a teaching of grouping windows associated with different applications (those having a priority class of 3) for z-ordering. This argument fails for at least two reasons.

First, Ashe discloses that *all* application windows have a priority class of 3 – as opposed to a screen saver having priority class 2 – and that the applications will overlie each other in z-order. This is precisely the problem Applicants' invention solves – the clutter of all applications having the same z-order priority, and hence the need to manually select and raise each desired window to the top. Applicants' invention solves this problem by defining a group of windows, and altering the z-order of all windows in the group together. Ashe does not teach or suggest such a solution, but in fact teaches against it by describing all applications as having the same priority class of 3, wherein all applications will be overlaid in z-order by a screen saver having a

priority class of 2. A “group” comprising all application windows in the GUI is a trivial exercise of the concept of grouping. Furthermore, a “group” comprising all application windows in the GUI cannot possibly meet the express limitation of claim 1, “raising a z-order of windows in said first affinity group *above other windows in said GUI environment* when any one window in said first affinity group is selected.”

Second, claim 1 expressly recites, “establishing, by a user, a first affinity group comprising *a subset of two or more but less than all* of said plurality of windows in said GUI environment.” A “group” comprising all application windows does not meet the limitation of a group of two or more, but less than all, application windows in a GUI environment.

Ashe teaches user-defined grouping of a subset of windows spawned by, and associated with, a single application, for the purpose of simultaneous z-order manipulation of windows in the group. This does not meet either of the claimed limitations of grouping windows associated with *different* and *independent* applications, as recited in claims 1, 14, 19, and 25. Nor does Ashe’s background discussion of z-order teach grouping less than all application windows for z-order manipulation with respect to other GUI windows.

Diedrichsen discloses grouping windows related as parent/child.

Diedrichsen discloses grouping together various child windows – those spawned by an application running in a parent window – together with the parent to form a logical group. col. 5, line 61 – col. 6, line 4. Windows in the group are identified by, *e.g.*, highlighting the parent window in high intensity and the child windows with a reduced intensity. col. 6, lines 17-34. “Thus, in a system according to the present invention, the user can always tell which objects are *related* to the selected window, even if there are more instances of the same application



running.” col. 6, lines 40-44. By its express language, Diedrichsen does not disclose grouping windows, for simultaneous z-order manipulation, that are associated with *independent* applications – only applications that “are related to the selected window” as parent/child. This is clear by examining the mechanism by which Diedrichsen forms and maintains the groups, which is described with reference to Figs. 7A and 7B.

Fig. 7A depicts the overall process: select an object (710); highlight it (715); and call related objects (720). Fig. 7B depicts the details of step 720. If the selected object is a parent and there are one or more child objects associated with it (740), iterate through all child objects (745, 750). On the other hand, if the selected object is a child and there is a parent associated with it (755), access its parent (760) and iterate through the parent’s other child objects (765), to highlight (or otherwise mark) the group. Diedrichsen is able to iterate through these parent/child associations by pointers (created when child objects are spawned) that associate them. See Fig. 6, and col. 8, lines 22-33.

[T]he parent window always knows about any child window it creates, and hence it can call methods on those windows to visually mark them on the display, in order to differentiate the groups of *related* user interface objects on the desktop; particularly, the parent window can call methods on its child windows to change the color of the window as required.

col. 8, lines 34-40 (emphasis added). Diedrichsen discloses no other mechanism for grouping windows. In particular, Diedrichsen discloses no mechanism by which *different* and *independent* applications running in different windows may be associated by a user (or in any other way) to form affinity groups of windows for simultaneous z-order manipulation on a GUI desktop.

Diedrichsen does not disclose grouping independent windows.

The Examiner cites to the Background of Diedrichsen, asserting it discloses grouping applications other than those related as parent/child. The full paragraph states,

Many applications make use of several user interface objects, typically windows and icons, *that are related logically*. Such objects are often child objects of a main or parent window object. Different applications can also be organized into groups of applications, each of which are *related by function*.

col. 1, lines 60-65 (emphasis added).

By its plain language, this paragraph discloses grouping only applications that are logically or functionally *related*. Applicants' claims recite grouping *independent* applications. Related applications are not independent.

The term "independent" is not defined in Applicants' specification. Accordingly, the term must be interpreted as it would by one of ordinary skill in the art. As indicated by numerous definitions in the MacGraw-Hill Dictionary of Scientific and Technical Terms, 5th Ed., 1994, in the technical arts, "independent" generally denotes "unrelated to," "not dependent on," or "having independent functionality." See, *e.g.*, independent axioms (one cannot be deduced as a theorem from the others); independent equations (no one is satisfied by a solution to the rest); independent events (probability of one occurring does not affect the probability of the other); independent functions (knowledge of values obtained by all but one insufficient to solve remaining one). See Exhibit A. One of ordinary skill in the computing arts would interpret "independent" applications to mean applications that are not logically or functionally related.

In the Advisory Action, the Examiner stated, "the Examiner interprets the scope of the term 'independent' to have broader coverage than 'unrelated by function'. For example, . . . when one instance of an application is closed, the other instance of the same application stays open exemplifies multiple 'independent' application instances." This semantic argument

misunderstands the disclosure of Diedrichsen with respect to multiple instances of the same application. Diedrichsen discusses this in the Background,

A drawback of the prior art is that none of the known systems takes into account the scenario when a user is running more than one instance of the same application; in such situation, association of windows belonging to a particular instance of a process is difficult. Actually, the desktop displays several identical windows at the same time, so that the user cannot find out which windows are related to which others. For example, the user would like to use a particular tool related to the window at present selected (active window); such tool produces data that directly affect the content of the active window. If different instances of the same tool are available in the desktop, it is very difficult to find out which is the correct one related to the active window.

col. 2, lines 33- 46.

Diedrichsen does not remotely suggest grouping together separate (what the Examiner calls independent) instances of the same application, and altering their z-order in the GUI environment together. Indeed, Diedrichsen does not hint at the desirability of doing so. Rather, Diedrichsen describes the problem that exists when separate instances of the same application are running in the GUI, and each has *other* windows associated with it (*e.g.*, one or more child windows, such as “a particular tool” in the passage quoted above). It is difficult to ascertain with which instance of the application (that is, which parent) a given child window is associated.

Having described this problem in the Background, Diedrichsen proceeds in the Description to disclose its solution – grouping parent and child windows together, visually indicating the relationship (such as by highlighting), and altering the z-order of the parent/child group together. For example, in the situation described in the above-quoted passage, a user could click on a tool, and would instantly see which of multiple instances of parent applications the tool was associated with, as the tool’s particular parent window would rise to the top of the GUI z-order upon selecting the tool window.

Nothing in Diedrichsen remotely suggests even the desirability of grouping windows associated with different and independent applications for the purpose of simultaneously altering the z-order of all windows in the group. Diedrichsen discloses precisely one type of window grouping – linking a parent window and all of its children – for the purpose of simultaneous z-order manipulation. Diedrichsen discloses precisely one method for implementing such grouping – cycling through a list of pointers associating each child window with its parent window, the pointers being created when each child window is spawned. Diedrichsen offers no suggestion of grouping windows associated with *different* and *independent* applications for z-order manipulation, and contains no teaching of any mechanism for doing so.

The claimed invention is not obvious over Ashe and Diedrichsen.

Neither Ashe nor Diedrichsen, separately or in combination, fairly teach or suggest grouping together two or more, but less than all, windows in a GUI environment, the windows associated with different, independent applications, for simultaneous z-order manipulation of the windows in the group with respect to all other windows in the GUI environment.

Furthermore, neither Ashe nor Diedrichsen provide any guidance in implementing such a feature. Ashe manipulates the z-order of a subset of child windows spawned by a single application via a linked data structure containing an entry for each window the application creates, each entry including group identification information. Ashe, col. 3, lines 37-45. Diedrichsen manipulates the z-order of a parent window and all of its children together, by cycling through pointers created as each child is spawned. Diedrichsen, Fig. 7B. In both cases, information about the windows in the z-order group is readily available, since in both cases, the child windows in the z-order group were spawned by the parent, which tracks them.

In stark contrast, the claims 1, 14, 19 and 25 recite grouping different and independent applications together for simultaneous z-order manipulation. For example, Figure 2 depicts forming an affinity group comprising windows running a word processor, an e-mail client, and a web browser. By design, operating systems carefully isolate different and independent applications' memory space, disk access, input/output processes, and the like. Accordingly, an application running in a window in a GUI operating system has no knowledge of, or access to, any different, independent application also executing in the GUI environment – except, that is, for tools it launches into separate windows (Ashe) or child processes it spawns (Diedrichsen). The prior art teaches utilizing this knowledge of *related* windows to implement simultaneous z-order manipulation. The prior art of record does not even suggest that it is possible to similarly implement simultaneous z-order manipulation of groups of windows associated with *different* and *independent* applications. That insight flows solely from Applicants' claims.

For at least the reason that the combination of Ashe and Diedrichsen fails to disclose every limitation of claims 1, 14, 19 and 25, the Examiner has failed to establish a *prima facie* case of obviousness, and the § 103 rejections must be reversed. All dependent claims include all limitations of their respective parent claim(s), and thus also define patentable nonobviousness over the art of record.

**35 U.S.C. § 103 Rejections Under Ashe, Diedrichsen, and Malamud**

Malamud does not cure the failure to establish a *prima facie* case of obviousness.

Malamud, cited for implementation details recited in dependent claims 6-9, 23, and 24, discloses a system for saving the viewing state of selected windows and closing the windows. Later, the windows may be re-launched, and the current state of each window is reset to the

saved state. Windows may be selected for the viewing state saving function by dragging a window to an iconic display area of a folder and dropping the window in the iconic display area. Malamud does not disclose simultaneous z-order manipulation of any group of windows.

**35 U.S.C. § 103 Rejections Under Ashe, Diedrichsen, and Haynes**

Haynes does not cure the failure to establish a *prima facie* case of obviousness.

Haynes, alternatively cited for the same implementation details in dependent claims 6-9, 23, and 24, as was Malamud, discloses a method of cycling GUI focus among selected windows on the desktop. Selection of the windows for the focus rotation is by dragging one window and dropping it on a focus rotation icon in another window. Haynes does not disclose simultaneous z-order manipulation of the window among which focus is cycled.

**Conclusion**

For the reasons discussed herein, the § 103 rejections of claims 1, 14, 19, and 24, and all claims depending therefrom, must be reversed.

Respectfully submitted,  
COATS & BENNETT, P.L.L.C.



---

Edward H. Green, III  
Registration No.: 42,604

Dated: July 14, 2008

1400 Crescent Green, Suite 300  
Cary, NC 27518  
Telephone: (919) 854-1844  
Facsimile: (919) 854-2084

**(VIII.) CLAIMS APPENDIX**

1. A method of associating windows generated by different applications in a GUI environment into one or more affinity groups by a user and accessing the windows as a group, comprising:
  - providing a GUI environment including a plurality of windows;
  - establishing, by a user, a first affinity group comprising a subset of two or more but less than all of said plurality of windows in said GUI environment, said first affinity group including windows associated with at least two different, independent applications, such that the windows comprising said first affinity group are related; and
  - raising a z-order of windows in said first affinity group above other windows in said GUI environment when any one window in said first affinity group is selected.
2. The method of claim 1 wherein raising the z-order of windows in said first affinity group above other windows in said GUI environment when any one window in said first affinity group is selected comprises raising all windows in said first affinity group to a top level z-order of said GUI environment.
3. The method of claim 2 further comprising tiling the windows in said first affinity group such that said windows may simultaneously occupy the top level z-order of said GUI environment.
4. The method of claim 1 wherein raising the z-order of windows in said first affinity group above other windows in said GUI environment when any one window in said first affinity group is selected comprises raising the selected window to a top level z-order of said GUI environment,

and raising all other windows in said first affinity group to one or more z-order levels immediately below the top level.

5. The method of claim 1 wherein establishing said first affinity group of windows comprises designating an affinity relationship between existing windows in said GUI by the user.

6. The method of claim 5 wherein designating an affinity relationship between existing windows by the user comprises:

- selecting a first window;
- dragging said first window to an affinity group icon on a second window; and
- dropping said first window on said affinity group icon of said second window, thereby establishing an affinity group relationship between said first and second window.

7. The method of claim 6, further comprising:

- selecting a third window;
- dragging said third window to an affinity group icon on either said first or second window; and
- dropping said third window on said affinity group icon of said first or second window, thereby adding said third window to said affinity group.

8. The method of claim 5 wherein designating an affinity relationship between existing windows by the user comprises:

- selecting a first window;



executing a first keystroke combination in said first window;  
selecting a second window; and  
executing a second keystroke combination in said second window, thereby establishing  
an affinity group relationship between said first and second window.

9. The method of claim 8, further comprising:

selecting a third window;  
executing said first keystroke combination in said third window;  
selecting either said first or second window; and  
executing said second keystroke combination in said selected first or second window,  
thereby adding said third window to said affinity group.

10. The method of claim 1 wherein establishing said first affinity group of windows comprises  
creating one or more new windows from an existing window by the user, said existing window  
and said new windows having an affinity group relationship.

11. The method of claim 10, wherein creating one or more new windows from an existing  
window by the user comprises:

selecting an existing window; and  
creating a first new window by executing an affinity group window creation command;  
whereby said first new window created has an affinity group relationship with said  
existing window.

12. The method of claim 11, further comprising:

selecting either said existing window or said first new window; and

creating a second new window by executing an affinity group window creation  
command;

whereby said second new window created has an affinity group relationship with said  
existing window and said first new window.

13. The method of claim 1 wherein said GUI environment includes virtual desktops.

14. A method of switching between two or more groups of windows in a GUI environment,  
comprising:

providing a GUI environment including a plurality of windows, said windows divided  
into at least first and second affinity groups, each said affinity group comprising  
two or more but less than all of said plurality of windows and each said affinity  
group including at least one window associated a different, independent  
application than at least one other window in the group;

raising the windows of said first affinity group to a z-order level above the windows of  
said second affinity group in said GUI environment in response to the user  
selecting a window in said first affinity group; and

raising the windows of the second affinity group to a z-order level above the windows of  
said first affinity group in said GUI environment in response to the user selecting  
a window in said second affinity group.

15. The method of claim 14 wherein said second affinity group comprises all windows in said GUI environment not otherwise included in any affinity group.

16. The method of claim 14 wherein raising a z-order of windows in said first affinity group comprises raising all windows in said first affinity group to the top level z-order of said GUI environment.

17. The method of claim 16 further comprising tiling the windows in said first affinity group such that said windows may simultaneously occupy the top level z-order of said GUI environment.

18. The method of claim 14 wherein raising the z-order of windows in said first affinity group comprises raising the selected window to a top level z-order of said GUI environment, and raising all other windows in said first affinity group to one or more z-order levels immediately below the top level.

19. A computer system, comprising:

a display device;

at least one input device; and

a processor programmed to display a GUI environment including a plurality of windows and a plurality of z-order levels on said display device, said GUI environment operative to allow a user to form affinity groups of said windows via said input device, each affinity group including windows associated with at least two

different, independent applications, and to select one said window to receive a GUI environment window focus, such that when a window in an affinity group receives said window focus, all windows within said affinity group rise to one or more z-order levels higher than all windows not within said affinity group.

20. The computer system of claim 19 wherein when a window in an affinity group receives said window focus, all windows within said affinity group rise to a highest z-order level of said GUI environment.

21. The computer system of claim 20 wherein all windows within said affinity group are tiled to fit within the highest z-order level of said GUI environment.

22. The computer system of claim 19 wherein when a window in an affinity group receives said window focus, the window receiving said focus rises to a highest z-order level of said GUI environment, and all other windows within said affinity group rise to z-order levels directly below said highest level.

23. The computer system of claim 19 wherein said at least one input device includes a mouse, and wherein said GUI environment is operative to allow a user to form affinity groups of said windows by dragging a first said window and dropping in on a window group icon on a second said window, thereby forming an affinity group relationship between said first and second windows.

24. The computer system of claim 19 wherein said at least one input device includes a keyboard, and wherein said GUI environment is operative to allow a user to form affinity groups of said windows by successively entering one or more window group keystroke combinations into first and second said windows, thereby forming an affinity group relationship between said first and second windows.

25. A computer readable medium which stores computer-executable process steps for a GUI environment including a plurality of windows and a plurality of z-order levels, said computer-executable process steps causing a computer to perform the steps of:

displaying said GUI environment on a display device;

accepting, from a user, designation of a first affinity group comprising a subset of two or more but less than all of said plurality of windows in said GUI environment, said first affinity group including windows associated with at least two different, independent applications, such that the windows comprising said first affinity group are related; and

raising a z-order of windows in said first affinity group above other windows in said GUI environment when any one window in said first affinity group is selected.

26. The computer readable medium of claim 25 wherein raising the z-order of windows in said first affinity group above other windows in said GUI environment when any one window in said first affinity group is selected comprises raising all windows in said first affinity group to the top level z-order of said GUI environment.

27. The computer readable medium of claim 26 further comprising tiling the windows in said first affinity group such that said windows may simultaneously occupy the top level z-order of said GUI environment.

28. The computer readable medium of claim 25 wherein raising the z-order of windows in said first affinity group above other windows in said GUI environment when any one window in said first affinity group is selected comprises raising the selected window to a top level z-order of said GUI environment, and raising all other windows in said first affinity group to one or more z-order levels immediately below the top level.

**(IX.) EVIDENCE APPENDIX**

There is no evidence.

**(X.) RELATED PROCEEDINGS APPENDIX**

There are no related proceedings.

# Exhibit A

On the cover: Photomicrograph of crystals of vitamin B<sub>1</sub>.  
(Dennis Kunkel, University of Hawaii)

Included in this Dictionary are definitions which have been published previously in the following works: P. 3. Jordain, *Condensed Computer Encyclopedia*, Copyright © 1969 by McGraw-Hill, Inc. All rights reserved. J. Markus, *Electronics and Nucleonics Dictionary*, 4th ed., Copyright © 1960, 1966, 1978 by McGraw-Hill, Inc. All rights reserved. J. Quick, *Artists' and Illustrators' Encyclopedia*, Copyright © 1969 by McGraw-Hill, Inc. All rights reserved. *Blakiston's Gould Medical Dictionary*, 3d ed., Copyright © 1956, 1972 by McGraw-Hill, Inc. All rights reserved. T. Baumeister and L. S. Marks, eds., *Standard Handbook for Mechanical Engineers*, 7th ed., Copyright © 1958, 1967 by McGraw-Hill, Inc. All rights reserved.

In addition, material has been drawn from the following references: R. E. Huschke, *Glossary of Meteorology*, American Meteorological Society, 1959; *U.S. Air Force Glossary of Standardized Terms*, AF Manual 11-1, vol. 1, 1972; *Communications-Electronics Terminology*, AF Manual 11-1, vol. 3, 1970; W. H. Allen, ed., *Dictionary of Technical Terms for Aerospace Use*, 1st ed., National Aeronautics and Space Administration, 1965; J. M. Gilliland, *Solar-Terrestrial Physics: A Glossary of Terms and Abbreviations*, Royal Aircraft Establishment Technical Report 67158, 1967; *Glossary of Air Traffic Control Terms*, Federal Aviation Agency; *A Glossary of Range Terminology, White Sands Missile Range, New Mexico*, National Bureau of Standards, AD 467-424; *A DCD Glossary of Mapping, Charting and Geodetic Terms*, 1st ed., Department of Defense, 1967; P. W. Thrush, comp. and ed., *A Dictionary of Mining, Mineral, and Related Terms*, Bureau of Mines, 1968; *Nuclear Terms: A Glossary*, 2d ed., Atomic Energy Commission; F. Casey, ed., *Compilation of Terms in Information Sciences Technology*, Federal Council for Science and Technology, 1970; *Glossary of Stinfo Terminology*, Office of Aerospace Research, U.S. Air Force, 1963; *Naval Dictionary of Electronic, Technical, and Imperative Terms*, Bureau of Naval Personnel, 1962; *ADP Glossary*, Department of the Navy, NAVSO P-3097.

## McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS, Fifth Edition

Copyright © 1994, 1989, 1984, 1978, 1976, 1974 by McGraw-Hill, Inc. All rights reserved. Printed in the United States of America. Except as permitted under the United States Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the publisher.

5 6 7 8 9 0 DOW/DOW 9 9

ISBN 0-07-042333-4

### Library of Congress Cataloging-in-Publication Data

McGraw-Hill dictionary of scientific and technical terms /

Sybil P. Parker, editor in chief.—5th ed.

p. cm.

ISBN 0-07-042333-4

1. Science—Dictionaries. 2. Technology—Dictionaries.

I. Parker, Sybil P.

Q123.M34 1993

503—dc20

93-34772

CIP

### INTERNATIONAL EDITION

Copyright © 1994. Exclusive rights by McGraw-Hill, Inc. for manufacture and export. This book cannot be re-exported from the country to which it is consigned by McGraw-Hill. The International Edition is not available in North America.

When ordering this title, use ISBN 0-07-113584-7.

cording an irregular flow of data economically and reliably. { ,iŋ'krə'mentəl'dijədəl rɪ'kɔrd-ər }

**Incremental dump tape** [COMPUT SCI] A safety technique used in time-sharing which consists in copying all files (created or modified by a user during a day) on a magnetic tape; in case of system failure, the file storage can then be reconstructed. Also known as failsafe tape. { ,iŋ'krə'mentəl'dəmp,tæp }

**Incremental frequency shift** [COMMUN] Method of superimposing incremental intelligence on another intelligence by shifting the center frequency of an oscillator a predetermined amount. { ,iŋ'krə'mentəl'frēkwənsē,ʃift }

**Incremental hysteresis loss** [ELECTROMAG] Hysteresis loss when a magnetic material is subjected to a pulsating magnetizing force. { ,iŋ'krə'mentəl'hɪstə'resɪs,lɒs }

**Incremental induction** [ELECTROMAG] The quantity lying between the highest and lowest value of a magnetic induction at a point in a polarized material, when subjected to a small cycle of magnetization. { ,iŋ'krə'mentəl'ɪn'dək-ʃən }

**Incremental mode** [COMPUT SCI] The plotting of a curve on a cathode-ray tube by illuminating a fixed number of points at a time. { ,iŋ'krə'mentəl'mɒd }

**Incremental permeability** [ELECTROMAG] The ratio of a small cyclic change in magnetic induction to the corresponding cyclic change in magnetizing force when the average magnetic induction is greater than zero. { ,iŋ'krə'mentəl'pərmē'əbɪlədē }

**Incremental printer** [GRAPHICS] A printer, such as a computer-controlled electric typewriter, that prints sequentially, character by character, on each line. { ,iŋ'krə'mentəl'prɪnt-ər }

**Incremental representation** [COMPUT SCI] A way of representing variables used in incremental computers, in which changes in the variables are represented instead of the values of the variables themselves. { ,iŋ'krə'mentəl'reprə'sən'tā-ʃən }

**Increment borer** [FOR] An augerlike instrument with a hollow bit, used to extract thin radial cylinders of wood from trees to determine age and growth rate. { ,iŋ'krə'mənt,bɔr-ər }

**Incresion** [PHYSIO] An internal secretion. { ,ɪn'krē-ʃən }

**Incross** [GEN] Mating between individuals from the same inbred line. { ,ɪn'krɒs }

**Incubation** [CHEM] Maintenance of chemical mixtures at specified temperatures for varying time periods to study chemical reactions, such as enzyme activity. [MED] The phase of an infectious disease process between infection by the pathogen and appearance of symptoms. [VERT ZOO] The act or process of brooding. { ,ɪn'kyə'bā-ʃən }

**Incubation period** [MED] The period of time required for the development of symptoms of a disease after infection, or of altered reactivity after exposure to an allergen. [VERT ZOO] The brooding period required to bring an egg to hatching. { ,ɪn'kyə'bā-ʃən,pɪrɪəd }

**Incubator** [AGR] A device for the artificial hatching of eggs. [MED] A small chamber with controlled oxygen, temperature, and humidity for newborn infants requiring special care. [MICROBIO] A laboratory cabinet with controlled temperature for the cultivation of bacteria, or for facilitating biologic tests. { ,ɪn'kyə,bād-ər }

**Incubator oil** [MATER] Special grade of long-burning petroleum heating oil used to heat farm incubators. { ,ɪn'kyə,bād-ər,oɪl }

**Incubatory carrier** [MED] A person infected with a certain microorganism but in such an early stage of disease that clinical manifestations are not apparent. { ,ɪn'kyə'bə,tɔrē'kær-ər }

**Incubous** [BOT] The juxtaposition of leaves such that the anterior margins of older leaves overlap the posterior margins of younger leaves. { ,ɪn'kyə'bəs }

**Incudate** [BIOL] Of, pertaining to, or having an incus. { ,ɪn'ky,dāt }

**Incumbent** [BIOL] Lying on or down. [GEOL] Lying above, said of a stratum that is superimposed or overlies another stratum. { ,ɪn'kəm-bənt }

**Incunabula printing** See cradle printing. { ,ɪn'kyə'nab-yə-lə'prɪnt-ɪŋ }

**Incurrent canal** [INV ZOO] A canal through which water enters a sponge. { ,ɪn'kər-ənt kə'nəl }

**Incurrent siphon** See inhalant siphon. { ,ɪn'kər-ənt'sɪfən }

**Incurvaridae** [INV ZOO] A family of lepidopteran insects in

the superfamily Incurvarioidea; includes yucca moths and relatives. { ,ɪn'kər-və'rɪ-ə,dē }

**Incurvarioidea** [INV ZOO] A monofamilial superfamily of lepidopteran insects in the suborder Heteroneura having wings covered with microscopic spines, a single genital opening in the female, and venation that is almost complete. { ,ɪn'kər,və'rɪ-ə,dē }

**Incus** [ANAT] The middle one of three ossicles in the middle ear. Also known as anvil. [METEOROL] A supplementary cloud feature peculiar to cumulonimbus capillatus; the spreading of the upper portion of cumulonimbus when this part takes the form of an anvil with a fibrous or smooth aspect. Also known as anvil; thunderhead. { ,ɪŋ'kəs }

**Indamine** [ORG CHEM]  $\text{HN}:\text{C}_6\text{H}_4:\text{N}:\text{C}_6\text{H}_4\text{NH}_2$  An unstable dye obtained by the reaction of *para*-phenylenediamine and aniline. Also known as phenylene blue. { ,ɪn'də,mēn }

**Indan** [ORG CHEM]  $\text{C}_9\text{H}_8(\text{CH}_2)_3$  Colorless liquid boiling at  $177^\circ\text{C}$ ; soluble in alcohol and ether, insoluble in water; derived from coal tar. { ,ɪn,dən }

**Indanthrone** [ORG CHEM]  $\text{C}_{28}\text{H}_{14}\text{N}_2\text{O}_4$  A blue pigment or vat dye soluble in dilute base solutions; used in cotton dyeing and as a pigment in paints and enamels. { ,ɪn'dən,θrɒn }

**Indeciduate placenta** [EMBRYO] A placenta having the maternal and fetal elements associated but not fused. { ,ɪn'də'sɪj-əwət plə'sent-ə }

**Indefinite ceiling** [METEOROL] After United States weather observing practice, the ceiling classification applied when the reported ceiling value represents the vertical visibility upward into surface-based, atmospheric phenomena (except precipitation), such as fog, blowing snow, and all of the lithometeors. Formerly known as ragged ceiling. { ,ɪn'def-ə'nət'sēl-ɪŋ }

**Indefinite integral** [MATH] An indefinite integral of a function  $f(x)$  is a function  $F(x)$  whose derivative equals  $f(x)$ . Also known as antiderivative; integral. { ,ɪn'def-ə'nət'ɪnt-əgrəl }

**Indehiscent** [BOT] 1. Remaining closed at maturity, as certain fruits. 2. Not splitting along regular lines. { ,ɪn'də'hɪs-ənt }

**Indelible ink** [MATER] An ink that cannot be removed, for example, India ink. { ,ɪn'del-ə'bəl'ɪŋk }

**Indene** [ORG CHEM]  $\text{C}_9\text{H}_8$  A colorless, liquid, polynuclear hydrocarbon; boils at  $181^\circ\text{C}$  and freezes at  $-2^\circ\text{C}$ ; derived from coal tar distillates; copolymers with benzofuran have been manufactured on a small scale for use in coatings and floor coverings. { ,ɪn,dēn }

**Indent** [SCI TECH] To form a depression by forcing inward. { ,ɪn'dent }

**Indentation hardness** [MET] The resistance of a metal surface to indentation when subjected to pressure by a hard pointed or rounded tool. Also known as penetration hardness. { ,ɪn,dent'ā-ʃən'hɑrd'nəs }

**Indented bolt** [DES ENG] A type of anchor bolt that has indentations to hold better in cemented grout. { ,ɪn'dentəd'bɔlt }

**Independent assortment** [GEN] The random assortment of the alleles at two or more loci on different chromosome pairs or far apart on the same chromosome pair which occurs at meiosis; first discovered by G. Mendel. { ,ɪndə'pendənt ə'sɔrtmənt }

**Independent axioms** [MATH] A list of axioms such that no axiom can be deduced as a theorem from the others. { ,ɪndə'pendənt'ak-sē-əmz }

**Independent chuck** [DES ENG] A chuck for holding work by means of four jaws, each of which is moved independently of the others. { ,ɪndə'pendənt'ʃʌk }

**Independent contractor** [ENG] One who exercises independent control over the mode and method of operations to produce the results demanded by the contract. { ,ɪndə'pendənt'kɒn,trəkt-ər }

**Independent equations** [MATH] A system of equations such that no one of them is necessarily satisfied by a solution to the rest. { ,ɪndə'pendənt'ɪkwā-zhənz }

**Independent events** [STAT] Two events in probability such that the occurrence of one of them does not affect the probability of the occurrence of the other. { ,ɪndə'pendənt'ɪvens }

**Independent footing** [CIV ENG] A footing that supports a concentrated load, such as a single column. { ,ɪndə'pendənt'fʊd-ɪŋ }

**Independent functions** [MATH] A set of functions such that knowledge of the values obtained by all but one of them at a point is insufficient to determine the value of the remaining function. { ,ɪndə'pendənt'fʌŋk-ʃənz }

**Independent line of sighting** [ORD] A system for laying a

## INDENE



Structural formula of indene.



## ent line of sighting

ia; includes yucca moths and rel-

A monofamilial superfamily of border Heteroneura having wings nes, a single genital opening in the almost complete. { 'in'kær, var

one of three ossicles in the middle [METEOROL] A supplementary ulonimbus capillatus; the spread- imulonimbus when this part takes fibrous or smooth aspect. Also . { 'in'kæs }

$C_6H_4-N-C_6H_4NH_2$  An unstable n of para-phenylenediamine and nylene blue. { 'in'dæ,mæn }  $(H_2)_3$  Colorless liquid boiling at 1 ether, insoluble in water; derived

$C_{28}H_{14}N_2O_4$  A blue pigment or e solutions; used in cotton dyeing id enamels. { 'in'dæn,thræn } ærvə] A placenta having the ma- ciated but not fused. { 'in'dæ'sij-

OL] After United States weather ng classification applied when the ents the vertical visibility upward eric phenomena (except precipita- snow, and all of the lithometeors. eiling. { 'in'def-ə'næt 'sæl'ij }

An indefinite integral of a function derivative equals  $f(x)$ . Also known { 'in'def-ə'næt 'int-ə'grəl } aining closed at maturity, as certain g regular lines. { 'in'dæ'his-ənt } ink that cannot be removed, for l-ə-bəl 'iŋk }

A colorless, liquid, polynuclear and freezes at  $-2^\circ C$ ; derived from rs with benzofuran have been man- use in coatings and floor coverings.

m a depression by forcing inward.

ET] The resistance of a metal sur- ected to pressure by a hard pointed known as penetration hardness.

A type of anchor bolt that has in- emented grout. { 'in'dentəd 'bɒlt } [GEN] The random assortment of ci on different chromosome pairs or osome pair which occurs at meiosis; let. { 'in'dæ'pæn-dənt ə'sɔrt'mənt } .TH] A list of axioms such that no a theorem from the others. { 'in-

ENG] A chuck for holding work by f which is moved independently of nt 'chæk }

[ENG] One who exercises inde- node and method of operations to ded by the contract. { 'in'dæ'pæn-

MATH] A system of equations such ssarily satisfied by a solution to the wāzhənz }

.T] Two events in probability such f them does not affect the probability ier. { 'in'dæ'pæn-dənt 'i'vens }

V ENG] A footing that supports a a single column. { 'in'dæ'pæn-dənt

MATH] A set of functions such that btained by all but one of them at a termine the value of the remaining it 'fæŋk-shənz }

ling [ORD] A system for laying a

## independent migration law

gun, whereby the angle of site and the angle of elevation (range) mechanisms work independently of each other. { 'in'dæ'pæn-dənt 'lɪn əv 'sɪd'ij }

**independent migration law** [ANALY CHEM] The law that each ion in a conductometric titration contributes a definite amount to the total conductance, irrespective of the nature of the other ions in the electrolyte. { 'in'dæ'pæn-dənt mɪ'græ-shən ,lə }

**independent random variables** [STAT] The discrete random variables  $X_1, X_2, \dots, X_n$  are independent if for arbitrary values  $x_1, x_2, \dots, x_n$  of the variables the probability that  $X_1 = x_1$  and  $X_2 = x_2$ , etc., is equal to the product of the probabilities that  $X_i = x_i$  for  $i = 1, 2, \dots, n$ ; random variables which are unrelated. { 'in'dæ'pæn-dənt 'rændəm ,verē-ə'bəls }

**independent recoil system** [ORD] A recoil mechanism for artillery that has an independent recuperator, that is, the recuperator is entirely independent of the recoil brake in the recoil mechanism. { 'in'dæ'pæn-dənt 'rē,kɔɪl 'sɪstəm }

**independent sector** [COMPUT SCI] A device on some punched-card tabulators that allows only the first of a series of similar data items to be printed and prevents printing of the rest. { 'in'dæ'pæn-dənt 'sekt-ər }

**independent-sideband modulation** [COMMUN] Modulation in which the radio-frequency carrier is reduced or eliminated and two channels of information are transmitted, one on an upper and one on a lower sideband. Abbreviated ISB modulation. { 'in'dæ'pæn-dənt 'sɪd,bænd ,mæj-ə'lə'shən }

**independent-sideband receiver** [ELECTR] A radio receiver designed for the reception of independent-sideband modulation, having provisions for restoring the carrier. { 'in'dæ'pæn-dənt 'sɪd,bænd rɪ'sē-vər }

**independent-sideband transmitter** [ELECTR] A transmitter which produces independent-sideband modulated signals. { 'in'dæ'pæn-dənt 'sɪd,bænd tranz'mɪd-ər }

**independent suspension** [MECH ENG] In automobiles, a system of springs and guide links by which wheels are mounted independently on the chassis. { 'in'dæ'pæn-dənt sə'spen-ʃən }

**independent variable** [MATH] In an equation  $y = f(x)$ , the input variable  $x$ . Also known as argument. { 'in'dæ'pæn-dənt 'verē-ə'bəl }

**independent wire-rope core** [DES ENG] A core of steel in a wire rope made in accordance with the best practice and design, either bright (uncoated) galvanized or drawn galvanized wire. { 'in'dæ'pæn-dənt 'wɪr ,rɒp ,kɔr }

**indefinite borite** [MINERAL]  $CaMgB_3O_{11} \cdot 11H_2O$  A monoclinic mineral composed of hydrous calcium and magnesium borate. { 'in'dæ'pæn-dənt ,rɪt }

**indefinite mineral** [MINERAL]  $Mg_2B_3O_{11} \cdot 15H_2O$  A hydrated borate mineral. { 'in'dæ'pæn-dənt ,mɪn-ə-rəl }

**indeterminacy principle** See uncertainty principle. { 'in'dæ'tɜrm-ə'nə'sē ,prɪn-sə'pəl }

**indeterminate cleavage** [EMBRYO] Cleavage in which all the early cells have the same potencies with respect to development of the entire zygote. { 'in'dæ'tɜrm-ə'nət 'klē-vij }

**indeterminate equations** [MATH] A set of equations possessing an infinite number of solutions. { 'in'dæ'tɜrm-ə'nət 'i'kwā-zhənz }

**indeterminate forms** [MATH] Products, quotients, differences, or powers of functions which are undefined when the argument of the function has a certain value, because one or both of the functions are zero or infinite; however, the limit of the product, quotient, and so on as the argument approaches this value is well defined. { 'in'dæ'tɜrm-ə'nət 'fɔrmz }

**indeterminate growth** [BOT] Growth of a plant in which the axis is not limited by development of a reproductive structure, and therefore growth continues indefinitely. { 'in'dæ'tɜrm-ə'nət 'grɒθ }

**indeterminate truss** [CIV ENG] A truss having redundant bars. { 'in'dæ'tɜrm-ə'nət 'trʌs }

**index** [COMPUT SCI] 1. A list of record surrogates arranged in order of some attribute expressible in machine-orderable form.

2. To produce a machine-orderable set of record surrogates, as in indexing a book. 3. To compute a machine location by indirection, as is done by index registers. 4. The portion of a computer instruction which indicates what index register (if any) is to be used to modify the address of an instruction. [MATH] 1. Unity of a logarithmic scale, as the C scale of a slide rule. 2. A subscript or superscript used to indicate a specific element of a set or sequence. 3. The number above and to the left of a

radical sign, indicating the root to be extracted. 4. For a subgroup of a finite group, the order of the group divided by the order of the subgroup. 5. For a continuous complex-valued function defined on a closed plane curve, the change in the amplitude of the function when traversing the curve in a counterclockwise direction, divided by  $2\pi$ . [PHYS] A numerical quantity, usually dimensionless, denoting the magnitude of some physical effect, such as the refractive index. { 'in,dɛks }

**index arithmetic unit** [COMPUT SCI] A section of some computers that performs addition or subtraction operations on address parts of instructions for the purpose of indexing, boundary tests for memory protection, and so forth. { 'in,dɛks ə'rɪθ-mæt-ik ,yü-nət }

**index arm** [NAV] On a marine sextant, a slender bar carrying the index; the bar pivots at the center of curvature of the arc of the sextant and carries the index and the vernier or micrometer. { 'in,dɛks ,ärm }

**index bed** See key bed. { 'in,dɛks ,bed }

**index catalog** [ASTRON] A supplement to the New General Catalog of nebulae. { 'in,dɛks ,kæd-əl,äg }

**index center** [MECH ENG] One of two machine-tool centers used to hold work and to rotate it by a fixed amount. { 'in,dɛks ,sɛn-tər }

**index chart** [MECH ENG] 1. A chart used in conjunction with an indexing or dividing head, which correlates the index plate, hole circle, and index crank motion with the desired angular subdivisions. 2. A chart indicating the arrangement of levers in a machine to obtain desired output speed or fuel rate. [NAV] In marine operations, an outline chart showing the limits and identifying designations of navigational charts, volumes of sailing directions, and so on. { 'in,dɛks ,çɑrt }

**index counter** [ENG] A counter indicating revolutions of the tape supply reel, making it possible to index selections within a reel of tape. { 'in,dɛks ,kaunt-ər }

**index crank** [MECH ENG] The crank handle of an index head used to turn the spindle. { 'in,dɛks ,krænk }

**index cycle** [METEOROL] A roughly cyclic variation in the zonal index. { 'in,dɛks ,sɪkəl }

**indexed address** [COMPUT SCI] An address which is modified, generally by means of index registers, before or during execution of a computer instruction. { 'in,dɛkst ə'dres }

**indexed array** [COMPUT SCI] An array of data items in which the individual items can be accessed by specifying their position through use of a subscript. { 'in,dɛkst ə'ræ }

**indexed sequential data set** [COMPUT SCI] A collection of related data items that are stored sequentially on a key, but are also accessible through index tables maintained by the system. { 'in,dɛkst sɪ'kwɛn-ʃəl 'dæd-ə ,set }

**indexed sequential organization** [COMPUT SCI] A sequence of records arranged in collating sequence used with direct-access devices. { 'in,dɛkst sɪ'kwɛn-ʃəl ɔr-gə-nə'zə'shən }

**index ellipsoid** [OPTICS] An ellipsoid whose three perpendicular axes are proportional in length to the principal values of the index of refraction of light in an anisotropic medium and point in the direction of the corresponding electric vector. Also known as ellipsoid of wave normals; indicatrix; optical indicatrix; polarizability ellipsoid; reciprocal ellipsoid. { 'in,dɛks ə'lip,sɔɪd }

**index error** [ENG] An error caused by the misalignment of the vernier and the graduated circle (arc) of an instrument. { 'in,dɛks ,er-ər }

**index forest** [FOR] A forest reaching the highest average in a given locality for density, volume, and increment. { 'in,dɛks ,fær-əst }

**index fossil** [PALEON] The ancient remains and traces of an organism that lived during a particular geologic time period and that geologically date the containing rocks. { 'in,dɛks ,fæs-əl }

**index glass** See index mirror. { 'in,dɛks ,glas }

**index head** [MECH ENG] A headstock that can be affixed to the table of a milling machine, planer, or shaper; work may be mounted on it by a chuck or centers, for indexing. { 'in,dɛks ,hed }

**indexing** [MECH ENG] The process of providing discrete spaces, parts, or angles in a workpiece by using an index head. { 'in,dɛk-sɪŋ }

**indexing fixture** [MECH ENG] A fixture that changes position with regular steplike movements. { 'in,dɛk-sɪŋ ,fiks-ʃər }

**index line** See isopleth. { 'in,dɛks ,lɪn }

**index liquid** [OPTICS] A liquid whose index of refraction is

## inde